

# Ants, nectar and a mystery

The purpose of nectaries in flowers is well known; they nourish insects which, in feeding, may effect pollination. Nectaries also occur on non-flower parts of some plant species but the function of these extrafloral nectaries (or E.F.N.'s for short) is not understood. One leading botanist has called their function "mysterious".

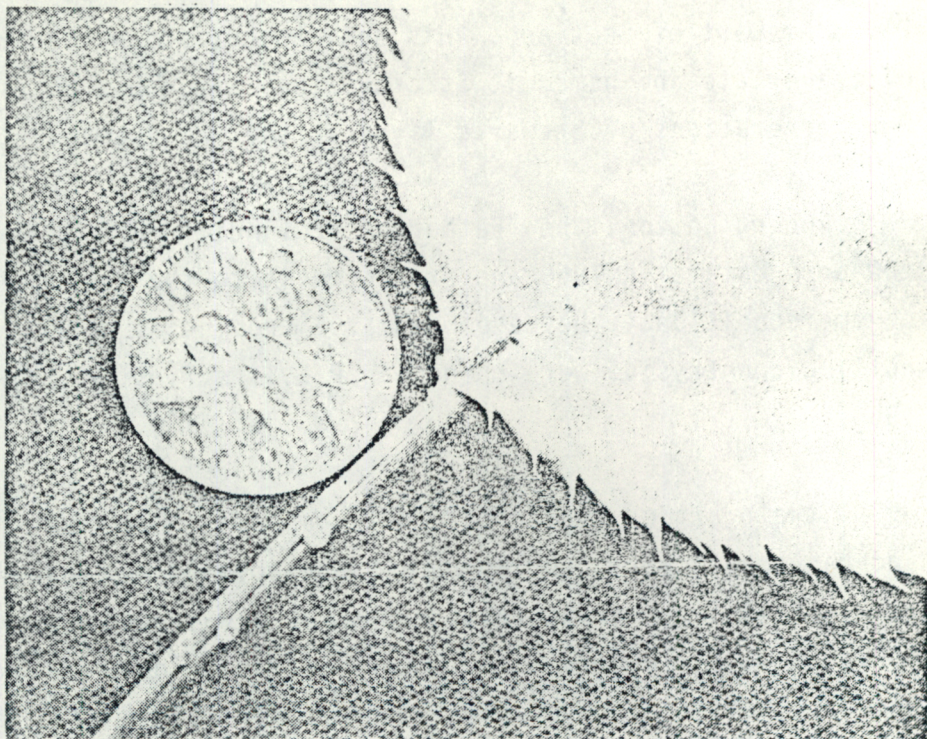
I knew of the occurrence of E.F.N.'s on some cultivated plants but it was not until local naturalist Al Grass asked me what I knew about them that I became interested in their occurrence in our native plants. I scanned the literature, found that they occur rather erratically, — in ferns, in relatives of the ferns and in the higher flowering plants. Studies were only beginning to define their function and field observations from field naturalists were deemed to be needed.

My own interest in E.F.N.'s in our native plants is not far advanced; such as it is my interest may stimulate other the observe.

In our native and domesticated cherries E.F.N.'s occur on the lowest part of a leaf stem (petiole); commonly there are two, one on each side of the petiole, just below the leaf blade; however their number, shape and size varies from location to location in our Province. It may well be that the amount and nature of the nectar they produce varies also. It is now documented that sugars are only one class of many compounds found in nectar.

Chokecherry (*Prunus demissa*), common in the drier parts of B.C., has well developed E.F.N.'s; the E.F.N.'s of bitter cherry (*P. emarginata*), which is found more widely in somewhat more humid environments, are small and are often reduced to mere pits. Barbara Bentley, who has studied E.F.N.'s of many species in several parts of the world, finds that ants make use of the E.F.N.'s nectar and that in doing so repel other insects which might devour the all important green leaf; plants and ants have developed a relationship of benefit to both. There are now some experiment with cultivated plants e.g. cotton where if E.F.N.'s and/or ants are removed substantially reduced harvests result. I common observe ants feeding from chokecherry E.F.N.'s but not very often from those of bitter cherry.

Is plant-ant mutualism the only system in which E.F.N.'s; to name but a



Extra floral nectaries can be seen as small structures on the petiole of the leaf of chokecherry (*Prunus demissa*)

few-bracken fern, willow, poplar, smartweed, lousewort. Ants on many of these do not seem to be very common or are absent. One group of plants with E.F.N.'s in which I have been interested are the jewelweeds (also known as touch-me-not, or policeman's helmets) (*Impatiens spp.*). They normally grow in damp shady habitats where ants are few or absent; their E.F.N.'s are prominent and usually clustered below the flowers and developing fruits. I have observed most closely *I. glandulifera* (presumed to be an introduction from Asia) and *I. ecalcarata*. I cannot state that I have never seen ants in their vicinity but they are rare; on the other hand I have seen aphids and a few other insects using the nectar. Could it be that the E.F.N.'s are a lure to keep predators from the reproductive structures? Many nectars contain constituents which may be narcotic or toxic. Perhaps these are present

in the *Impatiens* nectar? There are lots of examples of nectars which are narcotic. Maybe in some species such as a bitter cherry, where E.F.N.'s are very small, they are in the process of becoming useless or vestigial because they are few precocious ants in the habitats to which the bitter cherry has become adapted? Questions then remain about E.F.N. function which, maybe field observations by B.C. naturalists could help to answer?

1. THE BIOLOGY OF NECTARINES. B. Bentley, and T. Elias, editors. Columbia University Press (1983).

2. EXTRAFLORAL NECTARIES AND PROTECTION BY PUGNACEOUS BODYGUARDS. B. Bentley. Ann. Rev. Ecolo. and Systems 8:427 (1977).

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## AND JUST A FEW BIRD SIGHTINGS FOR THIS ISSUE!!

Geoff Hogan saw a cuckoo sp. in Dunstaffnage on Oct. 6. On Oct. 10, Dan McAskill saw two mature and one immature red-tailed hawk, and one rough-legged hawk (dark phase) in Irish-town.